INTERIM GUIDELINES RESPECTING POLYCHLORINATED BIPHENYLS IN WASTE OILS

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Ontario
Ministry of the Environment

The Honourable
Harry C. Parrott, D.D.S.,
Minister

K.H. Sharpe,
Deputy Minister

INTERIM GUIDELINES
RESPECTING
POLYCHLORINATED BIPHENYLS
IN
WASTE OILS

APRIL, 1978

INTERIM GUIDELINE

RESPECTING

THE PCB CONTENT OF WASTE OILS

FOR SPECIFIC APPLICATIONS

1.	WASTE OILS USED FOR DUST SUPPRESSION ON RURAL ROADS	25 ppm maximum
2.	WASTE OILS USED AS A SUPPLEMENTARY FUEL IN CEMENT MANUFACTURE	100 ppm maximum
3.	WASTE OILS USED AS A RAW MATERIAL FOR RE-REFINED LUBRICANTS AND CHEMICAL SPECIALTIES	25 ppm maximum

SAMPLING AND ANALYSIS

1. AS AN INTERIM MEASURE, IN THE PERIOD 1978 TO APRIL, 1979, SAMPLES OF WASTE OIL IN STORAGE FOR THESE APPLICATIONS SHALL BE TAKEN FOR MINISTRY OF THE ENVIRONMENT INSPECTION AND ANALYSIS.

2. BY APRIL, 1979, OWNERS OF WASTE OIL COLLECTION SYSTEMS MUST BE PREPARED TO SUBMIT TO THE MINISTRY OF THE ENVIRONMENT A CERTIFIED ANALYSIS OF THE PCB CONTENT OF WASTE OILS IN STORAGE FOR SPECIFIC APPLICATIONS.

INTRODUCTION

There is mounting evidence of widespread PCB contamination of waste oils that are collected by disposal contractors and used or sold as a dust suppressant on rural roads, as a raw material in re-refining processes and as a supplementary fuel in cement manufacture.

The quantity of waste oil collected in Ontario for these purposes is estimated to be in the order of 10 million gallons annually. Most of this oil appears to exhibit some evidence of PCB contamination.

The objective of this guideline is to prevent high PCB content waste oils from being dispersed into the environment, to establish an acceptable level of PCB contamination in these oils which will minimize risks due to direct exposure and to provide an interim measure of control pending further assessments of waste oil utilization practices and the development of alternative outlets for waste oils.

DISCUSSION

Road Oiling

It is estimated that some 6.5 million gallons of waste oil are used annually as a dust suppressant on rural roads in Ontario. The oil is generally applied in the Spring and Summer at a rate of between 0.2 and 0.3 gallons per square

yard (1.09 to 1.6 litres per square metre) up to a maximum of 0.5 gallons per square yard (2.7 litres per square metre).

The potential impact of PCB contamination in this oil is two fold:

1. It represents an input of PCB to the environment which may ultimately enter man's food chain and thus impact indirectly on man;
2. It poses a potential hazard of direct exposure of PCB by persons engaged in road oiling and persons in the vicinity of the road.

Ideally, all inputs of PCB to the environment should be eliminated. In the case of road oiling this is simply not practicable at this time. If the practice of road oiling is prohibited then there is no alternative outlet for some 6.5 million gallons of waste oil collected annually in Ontario for this purpose.

Based on the best available information relating to potential exposure to PCB from road oiling, taking into account the rate of evaporation of PCB from the oil, the potential health effects and occupational health standards, Ministry experts have concluded that an acceptable upper limit of PCB in waste oil used for road oiling is 25 ppm.

This should be regarded as an interim measure pending further review and assessment of road oiling practices.

At 25 ppm, the maximum potential release of PCB to the environment would be 1,300 pounds per year.

Supplementary Fuel in Cement Manufacture

Currently, the only plant authorized to use waste oil as a supplementary fuel in cement manufacturing is St. Lawrence Cement in Mississauga. The efficiency of the cement kiln to destroy PCB has been demonstrated and the Ministry will continue to permit the Company to accept waste oils contaminated with PCB at levels below 100 ppm. Available data on PCB in waste oils indicate that of 22 samples, only 2 contained PCB levels exceeding 100 ppm.

Re-refining and Chemical Specialties

Certain types of waste oil are used as raw materials in the manufacture of automotive lubricants and in the manufacture of machine cutting oils and chemical specialties such as industrial anti-foam agents.

These applications represent valuable and economically desirable re-use of waste materials. However, the nature and usage of the products and the methods of re-refining are such that any PCB present in the raw material waste oil will be dispersed into the environment. This is comparable to the practice of road oiling.

The total quantity of oil used for these purposes in Ontario is estimated to be in the order of 1.5 million gallons per year. Consequently, if the 25 ppm guideline is applied to raw materials for re-refining and chemical specialties, then the total potential release of PCB to the environment is 375 pounds per year.

In actual fact, limited measurements that have been conducted on these raw materials indicate PCB contents of 10-15 ppm so that the actual potential PCB release may be less than 375 pounds.

Action Taken in Other Jurisdictions

The ubiquitous nature of PCB contamination in waste oils has posed similar problems of PCB management and disposal to other regulatory agencies. Most jurisdictions have adopted the view that some minimum acceptable level of PCB contamination in waste oils must be recognized in order to direct high level PCB contaminated materials to available disposal outlets.

All agencies recognize that the ideal acceptable level of contamination is zero but that the application of such a criterion would be disruptive to society as a whole, and is impossible to administer and simply not achievable at this time.

Interim Guidelines for PCBs in waste oils are now being considered by Environment Canada, recommending that oils containing less than 0.005 percent (50 ppm) PCB should not be subjected to constraints with respect to use and disposal.

The United States EPA has adopted a standard of 500 ppm or greater for materials that are subject to the controls under The Toxic Substances Control Act with respect to disposal and labelling.

The State of Michigan defines materials that are not subject to control under PCB regulations as those containing less than 100 ppm.

APPLICATION AND ADMINISTRATION

This guideline shall apply to all of the uses of waste oil identified in the discussion; namely, road oiling, re-refining, chemical specialty raw materials and supplementary fuel in cement manufacturing.

In the 1978-1979 period, samples of waste oil in storage tanks for these purposes will be collected for PCB analysis either by the operators or by Ministry staff.

Initially, the Ministry of the Environment will carry out these analyses in the program described below.

Samples should be taken in such a manner as to be truly representative of the oil in the storage tanks, as far as this is practicable. Operators with multiple storage tanks may combine individual tank samples in proportion to the volume of the tanks to provide one single average sample.

During 1978, a comprehensive sampling and analysis program will be conducted by the Ministry. The objectives of this program will be:

a) determine the extent of existing PCB contamination in waste oils, particularly those intended for use as dust suppressants on rural roads;

b) identify any significant sources of high level PCB contaminated waste oils so that these may be eliminated from the waste oil collection system;

c) determine the extent of PCB contamination in new off-the-shelf oil products to identify a baseline level of contamination.

The program is proposed in three phases. These are:

1. Sampling and analysis of waste oil currently in storage;
2. Sampling and analysis of all significant sources of waste oil currently serviced by the waste oil collectors;
3. Sampling and analysis of a broad spectrum of off-the-shelf oil products.

In addition, the second phase of a Provincial Lottery funded project to assess the environmental impact and effectiveness of used oil as a dust suppressant on rural roads will be continued.

In particular, this second phase will examine the transport of contamination from the road surface via surface run-off, airborne dusts and the up-take of contaminants in plants.

Pending the results of these investigations, the practice of the use of waste oils may be subject to further restrictions.

By April, 1979, owners and operators of waste oil collection systems must be prepared to submit to the Ministry certified analyses of the PCB content of waste oils for specific applications to confirm compliance.